The effect of fiscal rules strength on fiscal discipline and output volatility in EU countries

by Tamara Bašić Vasiljev¹

April 2010

¹ The author is currently employed by the National Bank of Serbia, and can be contacted at the following e-mail address: tamara.basic-vasiljev@nbs.rs. The views expressed in this paper are those of the authors, and do not necessarily represent the official view of the National Bank of Serbia.
The effect of fiscal rules strength on fiscal discipline and output volatility in EU countries

by Tamara Bašić Vasiljev

ABSTRACT

We analyzed the effect of fiscal rules strength (measured by the European Commission fiscal rules strength index) on fiscal discipline and output volatility, in 27 EU member countries. For the sample of 27 member countries, in period 1990 to 2008, our analysis confirms the findings that the fiscal rule strength has a positive influence on fiscal discipline. Splitting the sample into old and new member countries (where new member countries are the ten Eastern European countries) however, leads to a conclusion that the positive effect stems from the new member countries, whereas the sample without them shows that stronger fiscal rules are associated with poorer fiscal discipline. We get the same result when we split the sample into countries that joined the European Monetary Union before 2001, or were never candidates for a membership, and those members of the EMU that joined after 2001 or are still on the “waiting list” for the membership. We conclude that the fiscal rules, per se, no matter how formally rigorous or evaluated as strong, are not enough for achieving fiscal discipline, and that much better results are obtained through supervision and control implemented in the European integrations admission processes (be them political, economic or monetary integrations), and through their punitive mechanisms (such as non-admission).

Key words: fiscal rules, budget deficit, business cycle, EU.
JEL code: E32, E6, H6.
Introduction

With adoption of the 1997 Stability and Growth Pact fiscal rules became a burning issue in economic research, especially in Europe. Although fiscal rules were known as early as mid XIX century, their use is intensified in the last two decades. World economic crisis, the effects of which are still present, especially in the euro zone countries, are underscoring the need for formalization of the country’s fiscal sustainability. Fiscal rules, once more, come up as a logical solution to this problem. Currently around 80 countries in the world are implementing some form of fiscal rules. Number of fiscal rules in use in the EU member countries rose from 16 in 1990 to 67 in 2008, 24 member countries implementing 2,8 fiscal rules on average. Only 5 of those are so called golden fiscal rules, which stipulate a budget balanced over a business cycle, while the rest refer to more or less rigid rules, which disregard business cycle. Table 1 gives an 2008 overview of EU countries’ fiscal rules, by their target.

Table 1: Fiscal rules in EU member countries in 2008, by the fiscal rule target

<table>
<thead>
<tr>
<th>Budget Balance Rules</th>
<th>Golden rules</th>
<th>Balanced budget rules</th>
<th>Nominal ceiling</th>
<th>Ceiling as a % GDP</th>
<th>Rules in structural terms</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Debt Rules</td>
<td>Debt ceiling in nominal terms</td>
<td>Debt ceiling as a % of GDP</td>
<td>Debt ceiling related to repayment capacity</td>
<td>Other</td>
<td>Total</td>
<td></td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>10</td>
<td>7</td>
<td>1</td>
<td>3</td>
<td>26</td>
</tr>
<tr>
<td>Expenditure Rules</td>
<td>Nominal expenditure ceiling</td>
<td>Real expenditure Ceiling</td>
<td>Expenditure growth rate (nominal)</td>
<td>Expenditure growth rate (real)</td>
<td>Other</td>
<td>Total</td>
</tr>
<tr>
<td></td>
<td>5</td>
<td>3</td>
<td>8</td>
<td>2</td>
<td></td>
<td>18</td>
</tr>
<tr>
<td>Revenue rules</td>
<td>Tax burden as a % GDP</td>
<td>Rule related to tax rates</td>
<td>Allocation of extra revenues</td>
<td>Other</td>
<td>Total</td>
<td></td>
</tr>
<tr>
<td></td>
<td>0</td>
<td>1</td>
<td>4</td>
<td>1</td>
<td></td>
<td>6</td>
</tr>
</tbody>
</table>

Source: European Commission

The question is then posed of how such fiscal rules influence fiscal balance, and how they affect output volatility, or in other words, are they achieving their goals and at what cost.

Numerous studies deal with the issue of fiscal rules influence on fiscal discipline. Ayuso-i-Casals, Debrun, Kumar, Moulin and Turrini (2007), Hallerberg and von Hagen (2007), von Hagen (2003), Lagona, and Padovano (2005), are dealing with effects of fiscal rules and budgetary procedures design on fiscal outcome in EU countries. Ayuso-i-Casals, Debrun, Kumar, Moulin and Turrini (2007) come to a conclusion that in 27 European Union countries, in the period 1990 to 2005, fiscal rules positively affect fiscal discipline, while the influence is running in exactly the preferable direction, i.e. from rules to discipline, although there are indication that the direction might me reverse, i.e. that stronger fiscal discipline (coming from voters preferences) might induce tendency for adoption of stronger fiscal rules. Hallerberg, Strauch and von Hagen (2007) have

See IMF(2009).

2
found in a sample of 15 European Union countries, in the period 1985 to 2004, that the centralization of budgetary procedures decreases the level of debt, while fiscal rules that proscribe budget deficit targeting, for periods of several years, positively affect fiscal discipline. Von Hagen (2003) finds, for the European Monetary Union countries, in the nineties, that the fiscal rules, derived within Stability and Growth Pact, positively affect fiscal discipline in small countries, while they cease to have such an impact in big countries. Lagona, and Padovano (2005), applying nonlinear principal component analysis, arrive at a conclusion that in 12 European Union countries sin the period 198 to 2003, stricter rules provide for a lower fiscal deficit and lower fiscal expenditures.

Alesina at al. (1999), Filc and Scartascini (2005) and Caceres, Corbacho and Medina (2010) investigate the effect of fiscal responsibility laws and fiscal rules, on fiscal balance, in South American countries. Alesina at al. (1999) have found, in a sample of 20 Latin American countries, in the period of eighties and early nineties, that stronger fiscal rules (in this case stronger in a sense of fiscal hierarchy, centralization and higher degree of transparency) positively affect fiscal discipline. Filc and Scartascini (2005), using an index developed by Alesina at al, in a sample of 11 South American countries confirm that centralization and transparency improve fiscal discipline. They also add that the same effect can be found in the sample of developed countries, and that the result is stronger when the countries which are members of monetary union or of the Stability and Growth Pact, are excluded from the sample. Caceres, Corbacho and Medina (2010) put an accent on exact timing of fiscal discipline law adoption (applying Quandt Andrews procedure and Markow switching process), and in that way try to obtain an unbiased estimate of its impact on fiscal discipline. Still, obtained results point to a conclusion that the adopted laws on fiscal discipline, do not have a distinct effect on it.

Dafflon and Pujol (2001), Feld and Kirchgessnaer (2006), Krogstrup and Waelti (2008) investigate an influence of fiscal rules and limitations, on fiscal balance in Swiss cantons. Dafflon and Pujol (2001) arrive at a conclusion that fiscal rules (or fiscal referenda which are used in Switzerland) do not have an effect on fiscal balance, if one takes into consideration voters preferences of the cantons. Krogstrup and Waelti (2008) however, come to a conclusion that fiscal rules do indeed have a strong positive effect on fiscal outcome in Swiss cantons. Feld and Kirchgessnaer (2006) have shown for a period of 1980 to 1998, that fiscal limitations decrease fiscal deficit, while the use of fiscal referenda additionally decreases the level of public debt in Swiss cantons.


Although there is no unique view, nor a unique empirical finding, when it comes to the effect of various fiscal rules, and their strength on fiscal discipline and volatility of

---

3 According to their findings fiscal rules are on its own endogenous, while the crucial influence on fiscal discipline is played by the fiscal preferences of voters, and not fiscal rules per se. The authors see the problem in a fact that voters' fiscal preference are possible to isolate in Switzerland, thanks to a unique system of federal referenda, but this might prove to be impossible in other countries.
output, there is a dominant view in theory that rules are still better than no rules, and that those rules are better that take into account the business cycle – most of all a golden fiscal rule. Empirical findings also indicate that the existence of fiscal rules is better than non-existence, but the question of which rules are better for fiscal discipline is still open.

In answering those questions one must also determine how to rank fiscal rules, i.e. how to measure their strength. Seminal paper in this field is a paper by Kopits and Symansky, from 1998, which introduces a system of fiscal rules grading by 8 criteria: 1. clarity, 2. transparency, 3. simplicity, 4. flexibility, 5. adequacy with respect to goal, 6. enforceability, 7. consistency with other economic policies and rules, and 8. efficiency (in a sense of public finance sustainability, and potentially sustainability of, for example, economic growth or low rate of unemployment). These criteria are still in use, although there is substantial criticism of their mutual inconsistency, ambiguity etc.4

According to the regulations of the European Commission, fiscal rules in EU countries can be divided into four categories: fiscal rules which define limits for budget balance, public debt level, public expenditures and public income. They can also be distinguished by weather they are applicable to the general government level or to its various parts (central, federal, local government or the level of social security funds). The strengths of fiscal rule is determined by the regulations of the European Commission based on five basic criteria: legal grounds of the rule, nature of the body which implements the rule, corrective mechanisms and punitive measures in case of breach, media coverage of the rules abiding or breach and level of government to which to rule applies.

Based on these five criteria European Commission calculates the value of fiscal rule strength index for its member countries, where a higher strength is assigned to rules which are defined by the Constitution or a Law, as opposed to a Bylaw or a political agreement. Rules that are monitored and implemented by and independent body, as opposed to those monitored and controlled by the Ministry of Finance, are also given a higher ranking. Rules that are accompanied by an automatic corrective mechanism and distinct punitive measures in case of rule breach, are ranked higher than those that are not, as well as those rules for which there is a vide media coverage, as well as public interest. Final value of the fiscal rule strength index will additionally depend on whether the rule applies to a general level or only to central or local level of government, or social security funds. Higher rank is assigned to rules that apply to higher levels of government and those which are more encompassing.

In this paper we estimate the efficiency of existing fiscal rules in European Union countries, by measuring their effect on fiscal discipline, and by estimating their effect on output volatility. It would be desirable that fiscal rules positively affect fiscal discipline, without increasing the output volatility, meaning that the achieved fiscal discipline is not reducing government’s ability to lead a countercyclical fiscal policy.

We estimated the influence of fiscal rules strength (measured by the EC index of fiscal rule strength) on fiscal discipline (measured by fiscal balance, in % of GDP) in 27 European Union countries. We assumed that the fiscal balance is an adequate measure of fiscal discipline, and that it to the largest extent (aside from fiscal policy) depends on business cycle. We looked at a panel data on fiscal balance, output gap and fiscal rules strength index for 27 EU member countries.

---

4 For a review of Kopits and Symansky model of fiscal rules ranking, see Creel (2003).
Data

We used the data on fiscal balance and GDP available at the Eurostat, and for fiscal rules strength index we used the data provided by the European Commission. Fiscal rules strength index, for 27 EU countries, for the period 1990 to 2008, are presented in a table, and on charts in the appendix. By using the official fiscal rules strength index we dealt with the metric sensitivity issues,\(^5\) when it comes to the variable of fiscal rules. This problem also received a lot of attention in the literature. Seminal paper by Kopits and Symansky (1998) gives an overview of desirable characteristics for a fiscal rule, and is still very influential in the field of fiscal rules ranking. Aside from these, a list of other practical issues arise, making the rules ranking complicated and potentially arbitrary. In that sense empirical papers offer a large number of solutions to the problem of metric sensitivity, seminal paper being the one from von Hagen (1992) who suggests a system of descriptions and codifications of the fiscal rules. A series of other papers continue this work, some being von Hagen and Harden (1996), Hallerberg and von Hagen (2001) and Hallerberg, Strauch and von Hagen (2007). Original contribution is given by De Haan, Moessen, and Volkerkink (1999) who construct linear index of fiscal rules strength. Lagona and Padovano (2006) suggest a nonlinear analysis of principal components, where a fiscal rules strength variable is summarized based on 6 characteristics of budgetary procedures for the chosen countries.

Indices constructed by theorists however, often suffer from problems of high degree of theoretical generalizations, so that the indices constructed in practice are often less sophisticated but have a higher chance to provide a realistic estimate of fiscal rules strength for a certain country. For this reason we decide to use an index constructed by the European Commission.

We calculated an output gap using an HP filter. Graph 1 shows estimated output gap and fiscal balance for the 27 EU countries, where a visual inspection points to a conclusion that there is a distinct positive correlation between the two for majority of the EU countries, which is more pronounced for the old member or Western European countries, while for the new member, or the east European countries, the link between the fiscal balance and output gap seems to be less pronounced.

\(^5\) Results of the empirical research of fiscal rules strength substantially depend on the scale on which the strength is assessed, and in that sense indices contracted by authors suffer from a problem of comparability. An index constructed by the European Commission is in that sense a superior one.
Under the assumption that, of all macroeconomic variables, business cycle is the one influencing the fiscal balance the most (and abstracting from any potential tax reforms, or public expenditure reforms) we have estimated its dependability on business cycle and fiscal rule strength index, in order to determine how the fiscal rules affect fiscal discipline.

Unit root test for panel series of fiscal balance and output gap, lead us to conclude that those series are not following a unit root process. Table 2 presents the results of the tests.
Table 2: UR test results of panel series of fiscal balance and output gap

<table>
<thead>
<tr>
<th>Variable / Test</th>
<th>Levin, Lin &amp; Chu (p values)</th>
<th>Im, Pesaran and Shin W-stat (p values)</th>
<th>ADF - Fisher Chi-square (p values)</th>
<th>PP - Fisher Chi-square (p values)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fiscal balance</td>
<td>-2.48396 (0.0065)***</td>
<td>106.448 (0.0000)***</td>
<td>106.448 (0.0000)***</td>
<td>96.7159 (0.0003)***</td>
</tr>
<tr>
<td>Output gap</td>
<td>-6.71370 (0.0000)***</td>
<td>-8.43215 (0.0000)***</td>
<td>179.735 (0.0000)***</td>
<td>158.134 (0.0000)***</td>
</tr>
</tbody>
</table>

Note: *Significant at the 1% level, ** significant at the 5% level and *** significant at the 10% level.

For fiscal balance and output gap we used the stationarity test including only a constant. Test results were uniform for all selected tests.

Analysis

Since we confirmed the stationarity of series we estimated the effect of fiscal rules strength on fiscal discipline (measured by fiscal balance) for the 27 EU countries, in the period 1990 to 2008. Fiscal balance is given as a percentage of GDP, and output gap is calculated applying the HP filter. Dummies were not used. As a control explanatory variable of fiscal balance we used an output gap, expecting to see a positive correlation (which would confirm a countercyclical fiscal policy).

We estimated a panel of 27 EU countries, with fixed effects and a country specific autoregressive factor, and obtained the following estimated equation:

\[
\Delta fb_t = 0.005 * fr_t + 0.059 * \Delta y_t + c_i * AR(1) - 0.02
\]

\[(0.250)** (0.013)** (0.000)**

where \(fb\) stands for fiscal balance, \(fr\) stands for fiscal rule, \(\Delta y\) stands for output gap, AR(1) is an auto regressive component of first order, and \(c_i\) is the estimated coefficient for the autoregressive factor for each of the 27 countries.

* p values are given in the brackets. *Significant at the 1% level, ** significant at the 5% level and *** significant at the 10% level.

\(R^2 = 0.735, DW = 1.675\)

Estimated coefficients can are significant at the 5% level.

The results suggest that there is a positive influence of the fiscal rules strength on fiscal discipline, where an increase in an estimated fiscal rule strength of 0.1 (or 3.3%) leads to a fiscal balance improvement of 0.05% of GDP. Such results are in conformity with most of the literature dealing with the fiscal rules efficiency in EU, in the last decade, for example works from von Hagen (2003), Hallerberg, Strauch, von Hagen (2007), Lagona and Padovano (2006) and Ayuso-i-Casals, Debrun, Kumar, Moulin and Turrini (2007).

Then we analyzed whether there is a difference in a relationship between the fiscal rules strength and fiscal discipline, in the new and old EU member countries.

---

6 As shown in the appendix 1, fiscal rules strength index for the 27 EU countries ranges from -1 to 2.15.
We estimated a panel of data for 10 Eastern European countries, again with fixed effects and country specific autoregressive factor, and obtained the following estimated equation:

\[ f_{b_i} = 0.006 \times f_{r} + 0.037 \times \Delta y_i + c_i \times AR(1) - 0.02; \ i \in (1.27) \]

\[
\begin{align*}
(0.018)^* & \quad (0.041)^* & \quad (0.000)^*** \\
\end{align*}
\]

*p values are given in the brackets. *Significant at the 1% level, ** significant at the 5% level and *** significant at the 10% level.

R^2 = 0.8107, DW = 1.7577

Estimated coefficients can are significant at the 5% level.

The effect of fiscal rules strength on fiscal discipline is stronger in the new member countries.

We then estimated a panel of data for the 17 Western European countries, again with fixed effects, cross-sectional ponders and country specific AR factors and obtained a following estimated equation:

\[ f_{b_i} = -0.004 \times f_{r} + 0.187 \times \Delta y_i + c_i \times AR(1) - 0.017; \ i \in (1.27) \]

\[
\begin{align*}
(0.056)^* & \quad (0.000)^*** & \quad (0.000)^*** \\
\end{align*}
\]

*p values are given in the brackets. *Significant at the 1% level, ** significant at the 5% level and *** significant at the 10% level.

R^2 = 0.7449, DW = 1.6727

In the sample of old member countries, we see that the fiscal rules no longer have a positive effect on fiscal discipline. We also notice that the effect of output gap on fiscal balance is smaller in new member countries, which can be interpreted as a sign that those countries are leading a less countercyclical fiscal policy then the old member countries.

We can therefore conclude that the fiscal rules in Eastern European countries have a positive effect on fiscal discipline, while in Western European countries they do not. Such a result might be a consequence of the fact that Eastern European countries typically joined the European Union with a lower level of public debt and a lower average fiscal deficit, then had the Western European countries, and were subjected to a harsher control of meeting the EU economic criteria then were the old members. Average fiscal deficit for the Eastern European countries in the period 1990 to 2009 was 0.61% of GDP, while at the same time Western European countries had an average fiscal deficit of 3.35%. In 2009 an average gross consolidated debt in Eastern European countries was 34.7% of GDP, while in the same year an average debt to GDP ratio in the Western European countries was 66.8%.

It could also be the case that the mechanism that forced the new member countries into a higher level of fiscal discipline, was their candidacy for accession to the European Monetary Union, which puts them under higher scrutiny of the European Union regulatory bodies, and gives them a stronger motive to obey the rules.

To test this hypothesis we estimated the effect of fiscal rules strength on fiscal discipline for the countries that joined the EMU after 2001, or are still not members but are on the “waiting list” for accession to the EMU.

Those are Bulgaria, Czech Republic, Hungary, Romania, Lithuania, Latvia, Poland, Slovakia, Malta, Cyprus, Slovenia and Greece. Results of the analysis for these 12 countries can be represented by the following equation:
\[ fb_t = 0.006 \times fr_t + 0.416 \times \Delta y_t + c_i \times AR(1) - 0.012; i \in (1.12) \]

\[ (0.002)*** (0.019)** (0.000)* \]

*p values are given in the brackets. *Significant at the 1% level, ** significant at the 5% level and *** significant at the 10% level.

\[ R^2 = 0.79, DW = 1.7519 \]

We see that in the sample of the countries which were admitted to the EMU later than 2001, or are still waiting for admittance, the effect of fiscal rules strength on fiscal discipline is higher than in the whole sample of the EU member countries. Such a result points to a conclusion that the strength of the fiscal rules is not necessarily the one driving the fiscal discipline, but that the positive effect on fiscal discipline is instead coming from the control mechanisms and punitive measures (such as non-admittance to the political or monetary union).

Such results are in line with findings of Filc and Scartascini (2005), Caceras, Corbacho and Medina (2010), Von Hagen (2003), who also find that fiscal discipline might not be in any way linked to harsher fiscal rules, and that there appears to be a difference in this regard between the small and big, and countries signees of Stability and Growth Pact and other developed countries, where the effect seems to be lower in bigger countries, and those that are signees of SGP.

The next question we asked is whether fiscal rules strength influences the volatility of the output. In other words, are EU countries achieving higher fiscal discipline at the cost of loss of fiscal policy flexibility, or in other words at the cost of deeper business cycles. For this reason we estimated the effect of fiscal rules strength index on output volatility measured by its standard deviation\(^7\).

Analysis results for 27 EU member countries with fixed effects and cross-sectional ponders, can be represented by the following equation:

\[ std(y_t) = 0.722 \times std(y_{t-1}) + 0.075 \times fr_t + 0.025 \]

\[ (0.000)*** (0.001)*** (0.034)** \]

*p values are given in the brackets. *Significant at the 1% level, ** significant at the 5% level and *** significant at the 10% level.

\[ R^2 = 0.8852, DW = 1.5941 \]

Again we estimated the subsample of the 17 old member countries, and the 10 new member countries. Analysis results for 17 EU member countries with fixed effects and cross-sectional ponders, can be represented by the following equation:

\[ std(y_t) = 0.88 \times std(y_{t-1}) + 0.024 \times fr_t + 0.036 \]

\[ (0.000)*** (0.000)*** (0.000)*** \]

*p values are given in the brackets. *Significant at the 1% level, ** significant at the 5% level and *** significant at the 10% level.

\[ R^2 = 0.9699, DW = 1.682 \]

\(^7\) Similar regression was estimated for the USA by Alesina and Bayoumi (1996).
Analysis results for 10 EU member countries with fixed effects and cross-sectional ponders, can be represented by the following equation:

\[
\text{std}(y_t) = 0.654 \times \text{std}(y_{t-1}) + 0.07 \times fr_t
\]

(0.000)*** (0.000)***

*p values are given in the brackets. *Significant at the 1% level, ** significant at the 5% level and *** significant at the 10% level.

R2 = 0.9584, DW = 1.4493

Results are suggesting that with an increase in fiscal rules strength index output volatility also increases. There is a significant difference in this effect when we compare old and new member countries. Eastern European countries exhibit several times more pronounced effect than the Western European countries, which supports the thesis that in these countries fiscal policy was far less countercyclical, and that the fiscal discipline was achieved at the expense of deeper business cycles.

This is certainly not the desirable effect of fiscal rules, but it is expected. Since the main role of fiscal policy is aside from the income redistribution, correction of output volatility, such a result points to a conclusion that the EU fiscal rules would have to be more flexible.

**Conclusion**

Although used since the second half of the nineteenth century, fiscal rules experienced their wider use in the last two decades. According to the IMF data, there are currently around 80 countries in the world that are implementing some form of fiscal rules. In the European Union, fiscal rules were an especially hot topic since the adoption of the Stability and Growth Pact in 1997. There is an abundance of literature dealing with the issue of fiscal rules and their effect on fiscal discipline, and output volatility. For the EU countries, the prevailing conclusion is that fiscal rules have a positive effect on fiscal discipline, as was shown by von Hagen (2003), Hallerberg, Strauch, von Hagen (2007), Lagona and Padovano (2006) and Ayuso-i-Casals, Debrun, Kumar, Moulin and Turrini (2007).

In this paper we analyzed the effect of fiscal rules strength (measured by the fiscal rules strength index, constructed by the European Commission) on fiscal discipline (measured by the fiscal deficit in percentages of GDP) and on volatility of output (measured by its standard deviation). The results obtained for the sample of 27 European Union member countries point to a positive effect of fiscal rules on fiscal discipline, which coincides with several studies of this topic. However if we split the sample into old and new member countries, old being 17 member countries from the Western Europe and new being 10 member countries from the Eastern Europe, we get the result that point to a fact that stronger fiscal rules affect the fiscal discipline positively only in the new member countries, while this is not the case in the old member countries. Namely, in the sample of 17 old member countries, the analysis results show that the fiscal balance deteriorates with an increase of fiscal rules strength index, whereas the opposite is true for the new member countries. We get similar results when we split the sample of 27 countries into those that joined the European Monetary Union earlier then 2001 or didn’t
join and are not candidates to do so, and those that joined afterwards or are candidates for admission. In the sample of countries that joined the EMU later, or are awaiting membership, we find that fiscal rules strength positively influences fiscal discipline, while in the rest of the countries the opposite is true.

We conclude that the strength or the rigorousness of fiscal rules is not sufficient in achieving fiscal discipline, and that in this sense better results are achieved by applying supervisory and control procedures such as those applied at in the European Union and European Monetary Union admission process, as well through punitive measures (such as non-admittance) which are in these cases easily applicable. Similar conclusions are presented in the work of Lienert (2010) who finds that without true dedication to the idea of fiscal discipline, an introduction of fiscal rules might not contribute to the goal of fiscal consolidation. Similar pessimistic conclusion can be found in the work done by Cacerass, Corbacho and Medina (2010).

The analysis of fiscal rules effect on output volatility shows that in the European Union countries there is a positive (though undesirable) effect of fiscal rules strength on output volatility, or in other words that the fiscal rules in EU are not sufficiently flexible, and do not sufficiently allow for a countercyclical fiscal policy. We also notice differences in these effects between the new and old member countries, namely that the positive effect of fiscal rules strength on output volatility is several times more severe in the Eastern European countries, than it is in the Western European countries. This fits into the result that in these countries fiscal rules had stronger influence on fiscal balance. In other words Eastern European countries were more vigilant in applying their fiscal rules, sacrificing their output volatility in the process, while other Western European countries were more vigilant in applying counter-cyclical fiscal policy, breaking (possibly overly inflexible) fiscal rules in the process.

Maybe in these findings lies the part of the answer to a question of why the fiscal rules breach is so common in the old member countries, in other words why they fail to exhibit positive correlation between the fiscal rules strength and fiscal discipline. These findings also point to a conclusion that it would be desirable to think about the reform of the Stability and Growth Pact, an idea that did receive a lot of attention in the literature, like works from Eichengreen and Wyplosz (1998), Beetsma and Uhlig (1999), Creel (2003), Annett (2006), Diebalek, Koehler-Toegelhofer and Prammer (2006), Biraschi (2008).

It is interesting here to look at the fiscal rules strength index ranking of the EU member countries, given in the Appendix 3. We see that no regularity is noticeable in a sense that countries from Western Europe would have stronger fiscal rules, which might a priori be expected, given their longer history of union membership. If we look at the analysis results in this light we see that although they do not have inherently stronger (nor weaker) fiscal rules then the Eastern European countries, Western European countries do exhibit weaker fiscal discipline, higher fiscal deficits but also less steep business cycles. On the other hand fiscal rules in Eastern European countries had more influence on fiscal discipline, but were also accompanied by deeper business cycles.

Additional questions therefore can be posed, on weather proscribed fiscal rules are wrongly evaluated as strong, or they have some inherent weaknesses that render them impotent in maintaining fiscal discipline. On the other hand the question arises of weather it was exactly the stronger fiscal rules, or strict adherence to them, in Eastern Europe, that
made their fiscal policy insufficiently counter-cyclical, and hence their output overly volatile.
## Appendix 1: European Commission fiscal rules strength index in EU member countries, 1990 to 2008

<table>
<thead>
<tr>
<th>Year</th>
<th>BE</th>
<th>BG</th>
<th>CZ</th>
<th>DK</th>
<th>DE</th>
<th>EE</th>
<th>IE</th>
<th>EL</th>
<th>ES</th>
<th>FR</th>
<th>IT</th>
<th>CY</th>
<th>LV</th>
<th>LT</th>
</tr>
</thead>
<tbody>
<tr>
<td>1990</td>
<td>0.23097</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>0.99181</td>
<td>0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.61649</td>
<td>-0.63652</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
</tr>
<tr>
<td>1991</td>
<td>-0.23097</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>0.99181</td>
<td>0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.61649</td>
<td>-0.63652</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
</tr>
<tr>
<td>1992</td>
<td>-0.239844</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>0.505841</td>
<td>0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.61649</td>
<td>-0.63652</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
</tr>
<tr>
<td>1993</td>
<td>0.823987</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>0.957043</td>
<td>0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.61649</td>
<td>-0.63652</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
</tr>
<tr>
<td>1994</td>
<td>0.823987</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>0.937465</td>
<td>0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.61649</td>
<td>-0.63652</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
</tr>
<tr>
<td>1995</td>
<td>0.952099</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>0.957043</td>
<td>0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.61649</td>
<td>-0.63652</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
</tr>
<tr>
<td>1996</td>
<td>0.952099</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>0.937465</td>
<td>0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.61649</td>
<td>-0.63652</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
</tr>
<tr>
<td>1997</td>
<td>0.952099</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>0.937465</td>
<td>0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.61649</td>
<td>-0.63652</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
</tr>
<tr>
<td>1998</td>
<td>0.952099</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>0.957043</td>
<td>0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.61649</td>
<td>-0.63652</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
</tr>
<tr>
<td>1999</td>
<td>1.65849</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>0.937465</td>
<td>0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.61649</td>
<td>-0.63652</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
</tr>
<tr>
<td>2000</td>
<td>0.42696</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>0.937465</td>
<td>0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.61649</td>
<td>-0.63652</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
</tr>
<tr>
<td>2001</td>
<td>0.42696</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>1.807311</td>
<td>0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.61649</td>
<td>-0.63652</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
</tr>
<tr>
<td>2002</td>
<td>0.42696</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>1.807311</td>
<td>0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.61649</td>
<td>-0.63652</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
</tr>
<tr>
<td>2003</td>
<td>0.42696</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>1.807311</td>
<td>0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.61649</td>
<td>-0.63652</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
</tr>
<tr>
<td>2004</td>
<td>0.42696</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>1.807311</td>
<td>0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.61649</td>
<td>-0.63652</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
</tr>
<tr>
<td>2005</td>
<td>0.42696</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>1.807311</td>
<td>0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.61649</td>
<td>-0.63652</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
</tr>
<tr>
<td>2006</td>
<td>0.42696</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>1.807311</td>
<td>0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.61649</td>
<td>-0.63652</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
</tr>
<tr>
<td>2007</td>
<td>0.42696</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>1.807311</td>
<td>0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.61649</td>
<td>-0.63652</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
</tr>
<tr>
<td>2008</td>
<td>0.42696</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>1.807311</td>
<td>0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.61649</td>
<td>-0.63652</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
<td>-0.99181</td>
</tr>
</tbody>
</table>

---

8 Source: European Commission.
Appendix 2: European Commission fiscal rules strength index in EU member countries, 1990 to 2008\(^9\)

Appendix 3: EU countries ranking by fiscal rules strength index

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>UK</td>
<td>WE</td>
</tr>
<tr>
<td>2</td>
<td>DK</td>
<td>WE</td>
</tr>
<tr>
<td>3</td>
<td>BG</td>
<td>EE</td>
</tr>
<tr>
<td>4</td>
<td>LT</td>
<td>EE</td>
</tr>
<tr>
<td>5</td>
<td>ES</td>
<td>WE</td>
</tr>
<tr>
<td>6</td>
<td>NL</td>
<td>WE</td>
</tr>
<tr>
<td>7</td>
<td>EE</td>
<td>EE</td>
</tr>
<tr>
<td>8</td>
<td>LU</td>
<td>WE</td>
</tr>
<tr>
<td>9</td>
<td>SE</td>
<td>WE</td>
</tr>
<tr>
<td>10</td>
<td>PL</td>
<td>EE</td>
</tr>
<tr>
<td>11</td>
<td>CZ</td>
<td>EE</td>
</tr>
<tr>
<td>12</td>
<td>DE</td>
<td>WE</td>
</tr>
<tr>
<td>13</td>
<td>FI</td>
<td>WE</td>
</tr>
<tr>
<td>14</td>
<td>FR</td>
<td>WE</td>
</tr>
<tr>
<td>15</td>
<td>IT</td>
<td>WE</td>
</tr>
<tr>
<td>16</td>
<td>BE</td>
<td>WE</td>
</tr>
<tr>
<td>17</td>
<td>SI</td>
<td>EE</td>
</tr>
<tr>
<td>18</td>
<td>HU</td>
<td>EE</td>
</tr>
<tr>
<td>19</td>
<td>AT</td>
<td>WE</td>
</tr>
<tr>
<td>20</td>
<td>SK</td>
<td>EE</td>
</tr>
<tr>
<td>21</td>
<td>LV</td>
<td>EE</td>
</tr>
</tbody>
</table>

\(^9\) Source: European Commission.
Appendix 4: Fiscal balance and fiscal rules strength correlation in the 27 EU member countries, 1990 - 2009

|   | AT  | BE  | BG  | CY  | CZ  | DE  | DK  | EE  | EL  | ES  | FI  | FR  | HU  | IE  | IT  | LT  | LU  | LV  | MT  | NL  | PL  | PT  | RO  | SE  | SI  | SK  | UK  |
|---|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|-----|
| 22.| RO  | EE  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 23.| IE  | WE  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 24.| PT  | WE  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 25.| CY  | WE  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 26.| EL  | WE  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |
| 27.| MT  | WE  |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |     |

AT 0.731219
BE 0.011105
BG 0.474346
CY NA
CZ 0.494446
DE NA
DK -0.284076
EE NA
EL NA
ES -0.133794
FI 0.496726
FR 0.478566
HU -0.22941
IE 0.451513
IT -0.223331
LT 0.323139
LU 0.404683
LV NA
MT NA
NL NA
PL 0.459685
PT 0.366157
RO 0.309489
SE 0.074306
SI 0.783131
SK 0.321774
UK 0.482856
References